

Meeting Notes
Mendota Carbon Negative Energy Project (MCNEP)
Subsidence & Well Stimulation Discussion (Revision 1)
Joint Virtual Meeting with CalGEM & EPA Region 9
Thursday October 28, 2021; 9:00 AM – 10:30 AM PST

Attendees

Name	Affiliation	Title	Contact
Roya Kambin	MCNEP	Lead, Permitting & Regulatory Compliance	rkambin@chevron.com
Diogo D'Oliveira	MCNEP	Lead, Subsurface	ddoliveira@slb.com
Rebecca Hollis	MCNEP	Permitting & Regulatory Compliance	rhollis@cleanenergysystems.com
Natalie Nowiski	MCNEP	Permitting & Regulatory Compliance	NNowiski@slb.com
Vincent Agusiegbe	CalGEM	Manager, Carbon Management Program	Vincent.Agusiegbe@conservation.ca.gov
Michael Warren	CalGEM	CCS Management/Oversight	Michael.Warren@conservation.ca.gov
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Salma Khatun	CalGEM	CCS Management/Oversight	Salma.Khatun@conservation.ca.gov ;
Yenhung (Calvin) Ho	EPA Region 9	Groundwater Protection, Class VI Permit Reviewer/Writer	Ho.Yenhung@epa.gov
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Shari Ring	Cadmus Group	Technical Consultant	Shari.Ring@cadmusgroup.com
Molly McEvoy	EPA HQ	Office of Ground Water & Drinking water	mcevoy.molly@epa.gov
Amit Garg	CalGEM	CCS Management/Oversight	Amit.Garg@conservation.ca.gov
Sharon Newman	EPA HQ	Office of Groundwater & Drinking Water	Newman.sharon@epa.gov
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Meeting Purpose

- Align on well construction details for injection well

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- Clarify management of potential calcium carbonate/salt precipitates in injection well

Introductions – Meeting attendees introduced themselves

Mendota Project Overview

- MCNEP Organization (Roya Kambin)
 - MCNEP Member Companies formed a Project Company that will be the Class VI Permit Applicant and Permit Owner
 - MCNEP is also responsible for financial assurance
 - MCNEP Member companies are: Clean Energy Systems (CES), Schlumberger New Energy, Chevron, and Microsoft
- Project Overview (Rebecca Hollis)
 - Waste to energy concept: Agricultural waste from California Central Valley gasified and used in a proprietary oxy-combustion system to produce electricity
 - Captured CO₂ will be injected and permanently sequestered on site; no offsite pipelines
 - Project site was an existing biomass plant built in 1980s; idled since 2015

Subsidence (Diogo D'Oliveira)

- Diogo D'Oliveira (MCNEP) summarized the subsidence reported at Gil Ranch and CalGEM/EPA concerns
- MCNEP's investigation of the issue, based on publicly available data and site survey indicate changes in elevation within approximately 1.5 inches/year. However, the data are not conclusive because of earth movement related to construction and site operations. Subsidence on the scale reported at Gil Ranch (4 inches/year) was not observed.
- Subsidence in the area is shallow (well above the proposed injection zone) and related to groundwater extraction for agricultural purposes
- MCNEP proposes to not **bring intermediate string cement above the surface casing shoe** cement the surface string; this is acceptable per EPA regulations
- Discussion Summary:
 - Meeting attendees concurred there is subsidence in the area that must be accounted for in the injection well design
 - MCNEP has not been able to obtain supporting data or documentation regarding actual subsidence observed, or well interventions/workovers. This information would be very helpful with respect to injection well design and construction
 - CalGEM confirmed mitigation strategies in general terms have been centered on either relieving stress or on allowing relative movement between intermediate and surface casing (intermediate casing cement top below surface casing shoe).
 - CalGEM will search district records to provide data and information to MCNEP regarding subsidence and related well interventions
 - MCNEP will evaluate different types of cement to select the appropriate cement for a CO₂ injection well for the project duration

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Management of Potential for Calcium Carbonate & Salt Precipitates (Roya Kambin)

- It has been reported that calcium carbonate and/or salt deposits clog the well screens of some injection wells. These deposits sometimes require intervention
- Class VI IC Permit application requires inclusion of a well stimulation plan. If this plan is not included, and well stimulation is required, a major permit modification is required
- The regulatory definition of “well stimulation” includes several processes of variable complexity and associated risks. Specifically, “well stimulation” includes: surging, jetting, blasting, acidizing, and hydraulic fracturing.
- EPA regulations also require (in the event well stimulation is required), 30 days notice and a detailed plan for the specific intervention
- Given the above conditions, it is not clear what level of detail is required in the Class VI application regarding well stimulation
- Summary of Discussion
 - EPA has primacy over Class VI wells in this scenario
 - Some of the “well stimulation” alternatives are, in practice, considered well maintenance (e.g., acidizing)
 - Well stimulation in the Class VI application can be a general statement; EPA will provide an example

Action Items

- MCNEP Team will work with Vincent Agusiegbe and Michael Warren to obtain subsidence data/information from CalGEM district records (within ~1 month)
- EPA (Calvin Ho) will provide example language for well stimulation for the Class VI Permit Application **(Action Completed October 28)**